

Report submitted to

The Maine State Board of Education
23 State House Station
Augusta, Maine 04333-0023

Review of Application Submitted by Cornell University
and the University of New Hampshire
for
Approval to Offer Academic Credit-Bearing Courses in Maine
at the Shoals Marine Laboratory

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Contents:

- I. Introduction
- II. Review of Application — Conformance to Standards
- III. Conclusion and Recommendation

I. Introduction:

In April of 2016, the University of New Hampshire and Cornell University submitted a joint application for authority to continue offering college level classes at the Shoals Marine Laboratory (SML), a facility that the two institutions operate jointly on Appledore Island. Because these classes are offered for college credit, and because Appledore Island is part of Kittery, Maine, the SML is required to be authorized by the Maine Board of Education, under the provisions in Maine Law, as follows

05-071 DEPARTMENT OF EDUCATION

Chapter 149: PROCEDURES FOR OBTAINING AUTHORIZATION FOR
INSTITUTIONS OF HIGHER EDUCATION TO CONFER ACADEMIC DEGREES
OR TO OFFER DEGREE COURSES/PROGRAMS IN THE STATE OF MAINE

05-071 DEPARTMENT OF EDUCATION

Chapter 170: STANDARDS FOR EVALUATING REQUESTS FOR DEGREE-
GRANTING AUTHORIZATIONS AND FOR OUT-OF-STATE POSTSECONDARY
INSTITUTIONS SEEKING TO OFFER ACADEMIC CREDIT
COURSES/PROGRAMS IN MAINE

Upon The Department of Education's receipt of the Cornell-UNH application, Angel Loredó, Education Specialist in the Department, formed a review committee of three individuals:

Dr. David W. Townsend, Professor of Oceanography, University of Maine (Chair)
Dr. Brian F. Beal, Professor of Marine Ecology, University of Maine, Machias
Ms. Chelsey A. Fortin, Maine Department of Education

The committee was provided with the application and numerous appendices submitted by Cornell University and the University of New Hampshire, and was charged specifically with addressing the "standards" in Maine's law 05-071 Chapter 170, and to make a determination as to whether the application addresses those standards satisfactorily.

The standards are:

- A. Organization and Governance
- B. Institutional Objectives
- C. Degree Requirements
- D. Admission Requirements
- E. Academic Programs
- F. Faculty
- G. Student Services
- H. Library and Learning Resources
- I. Facilities
- J. Financial Resources

Having had a chance to study the joint application, the Review Committee met at the Maine Department of Education offices in Augusta on July 15, 2016. The committee was briefed by Dr. Wilson Hess, a member of the Board of Education, and Mr. Loreda. Following a period of discussion, we then held a video conference with representatives from Cornell and UNH, at which time the Review Committee members questioned specific aspects of the application and asked for clarification on a number of items. The committee was pleased with the answers given, and asked the representatives to submit a revised application. That revised application was delivered to the committee and forms the basis for this report.

II. Review of Application — Conformance to Standards:

The “standards” to which the application is accountable are given in Chapter 170 of 05-071 under Section 2, OFFERING IN MAINE BY OUT-OF-STATE INSTITUTION.

Immediately following our listing of each standard, we present the “**Committee’s response**”.

Section 2 of Chapter 170 opens with an Introduction, which describes: Operation Authorization and Accreditation, meaning that the institution(s) must have operating authority in their home state(s) and have the appropriate accreditation.

Cornell University and the University of New Hampshire are indeed prestigious institutions of long standing. Both are Land Grant Universities (Cornell being a “public-private” university) and are now authorized to operate in their home states, and have been authorized for more than 150 years. Both universities have accreditation from their appropriate accrediting agencies.

Standard A: Organization and Governance

1. The institution has a current written document detailing the administrative responsibilities of the governing board, administrators, the faculty, the staff, and the students (if staff and students participate in institutional governance).
2. Organizational charts clearly showing the lines of authority and the relationships among component units and personnel have been developed with attention given to both on-campus and off-campus operations.

Committee response: The SML is operated jointly by UNH and Cornell University by way of a Memorandum of Agreement, which is reviewed every five years and revised as needed.

A Shoals Marine Laboratory Executive Committee (SEC) which includes representatives from each institution provides oversight of the operations and finances of the program, and works closely with an Executive Director, who is an *ex officio* member of the SEC, and who is the chief administrative and academic officer. He/she is responsible for all on-site administration and supervision of employees. The Executive Director is an employee of UNH and is a member of the UNH faculty.

Day-to-day operations at SML are run by 10 year-round employees and an additional 12 seasonal employees of both Cornell and UNH.

Academic programs are supervised by two Academic Coordinators (one from each institution) who work closely with, and report to, the Executive Director.

The committee finds the standards met for Section A, Organization and Governance.

Standard B: Institutional Objectives

1. The institution has defined its overall educational mission and general purposes or goals, and has included within its statement of purpose such uniqueness or programming and educational philosophy as may be inherent in the proposed degree courses or programs to be offered in Maine.
2. The institution's statement of purpose is readily identifiable through its course and program offerings.

Committee response: The application submitted by Cornell and UNH lists 5 specific goals or objectives (the committee equates these two terms); they are:

1. Provide high quality immersive, hands-on undergraduate education in marine science and environmental sustainability.
2. Provide undergraduates research internships with rigorous training in a diversity of marine and environmental fields
3. Provide ready access to a variety of terrestrial and marine ecosystems for the advancement of scientific understanding and the development of sustainable systems.
4. Provide a variety of public education programs to promote scientific understanding and sustainability.
5. Engage community members and alumni in philanthropic development efforts to raise \$250,000 for SML operations annually.

These goals are assessed annually, as to their having been delivered, by way of written participant evaluations. All participants of courses, internships, and programs are sent two sets of evaluations. One critiques the academic rigor of their program and the other focuses on facilities' and logistical support. In addition, academic programs are reviewed by an SML Academic Advisory Committee (SML ACC) which is comprised of three sub-committees: UNH faculty; CU faculty; and Non-UNH or CU Faculty. All academic courses are reviewed and approved by the appropriate academic departments at UNH and CU.

The standards are met for section B.

Standard C: Degree Requirements

1. The institution awards degrees, only upon successful completion of the courses or programs of study, and degree requirements to be met are specified in writing.
2. The institution's semester hour* requirements for degree completion meet the following minimums:

Associate Degree - An Associate degree requires a minimum of 60 semester hours or 90 quarter hours. The Associate of Arts degree shall include a minimum of 36 semester hours or 54 quarter hours in general education courses.** The Associate of Science degrees shall include a minimum of 15 semester hours or 23 quarter hours in general education courses.

Baccalaureate Degree - A Baccalaureate degree requires a minimum of 120 semester hours or 180*** quarter hours

Master's Degree - A Master's degree shall require a minimum of 30 semester hours or 45 quarter hours beyond the Baccalaureate.

Doctoral Degree - A Doctoral degree shall require a minimum of 60 semester hours or 90 quarter hours beyond the Baccalaureate in addition to the dissertation.

Decisions will be made on a case-by-case basis for institutions using a non-traditional approach instead of semester hours or quarter hours to determine degree completion

Committee Response: SML does not offer complete degree programs. Cornell University and UNH students receive course credit from their respective institutions. Upon completion of a SML course, students from other universities and colleges receive an academic transcript from UNH. Upon request, Cornell University may provide an academic transcript.

The standards for section C (Degree Programs) are not applicable.

Standard D: Admission Requirements

1. The institution has written policies defining the minimum requirements for admission into the academic credit courses or program proposed for offering in Maine.

* With institutions using the semester system there are two 15-week semesters in an academic year. A semester hour is defined as the credit received for completing 15 contact hours of study in class and 30 clock hours in outside preparation. One semester hour is the equivalent of 1.5 quarter hours.

** See Appendix A of Application for list of general education courses.

*** With institutions using the quarter system there are three 10-week quarters in an academic year. A quarter hour is 2/3 of a semester hour (one quarter hour is the equivalent of .667 semester hours)

2. The admission policies include detailed the standards for academic credit given for experience, and the criteria for determining transfer credit.
3. A written refund policy is in evidence detailing the criteria for the refund of tuition and fees.

Committee Response: SML bases enrollments in classes on the applicant's having supplied evidence of having met specific pre-requisites, and in the case of SCUBA diving class, whether the student is SCUBA certified. Specific requirements and pre-requisites are listed in course syllabi that were attached to the application.

The standards are met for section D.

Standard E: Academic Programs

1. The educational program and curriculum to be offered in Maine is reflective of the philosophy, purposes, and objectives of the institution.
2. The institution has a written policy describing its system for evaluating student performance, the minimum performance considered satisfactory, the criteria for academic probation and conditions for dismissal for unsatisfactory performance.
3. Procedures for evaluation of programs of instruction and specific courses are clearly stated in writing.
4. The institution's programs of study consist of planned educational experience to meet the stated objectives and includes attention to required prerequisites, required courses, and appropriate progression.
5. The materials and equipment necessary for attainment of the objectives of the course of program offerings are available at the Maine site.
6. Off-campus programs are equivalent to those conducted at the home campus.

Committee Response: Educational programs and courses offered at SML reflect the philosophy, purposes, and objectives of both Cornell University and the University of New Hampshire.

The mission of Cornell University is to: *"discover, preserve, and disseminate knowledge; produce creative work; and promote a culture of broad inquiry throughout and beyond the Cornell community. Cornell also aims, through public service, to enhance the lives and livelihoods of our students, the people of New York, and others around the world."*

The mission of the University of New Hampshire is to: *"provide comprehensive, high-quality undergraduate programs and graduate programs of distinction. Its primary purpose is learning: students collaborating with faculty in teaching, research, creative expression, and service...UNH is distinguished by its commitment to high quality undergraduate instruction, select excellence in*

graduate education, relatively small size, a location in a beautiful and culturally rich part of the seacoast of New England and a strong sense of responsibility for this special place, a commitment to serving the public good, and our emergence over the past decade as a significant research institution. The dedication of our faculty to the highest academic standards infuses all we do with the excitement of discovery.”

The Shoals Marine Laboratory strives, through its academic programs, to reflect and encompass the missions of each university by providing: 1) high quality immersive, hands-on undergraduate education in marine science and environmental sustainability; 2) undergraduates research internships with rigorous training in a diversity of marine and environmental fields; 3) students with ready access to a variety of terrestrial and marine ecosystems for the advancement of scientific understanding and the development of sustainable systems; and, 4) a variety of public education programs to promote scientific understanding and sustainability. These efforts are accomplished through a highly-qualified, well-vetted faculty (see section F) that offer courses, internships, and research experiences typically during late spring through mid-summer at SML.

Both Cornell University and the University of New Hampshire have a written policy describing its system for evaluating student performance (Cornell University policy: <http://theuniversityfaculty.cornell.edu/handbook/toc.html>; University of New Hampshire policy: <https://www.unh.edu/student-life/handbook/grades-and-honors>).

At SML, the syllabus for each course (example listing given in Fig. 1), regardless if the course is intended for high schoolers or undergraduates, contains a specific section clearly stating how students will be evaluated as well as required prerequisites. Evaluation criteria are unique to each course/instructor(s), but follow closely the guidelines set out by each institution.

Research internships also constitute programs of instruction at SML each summer. Approximately twenty 2- to 10-week internships are offered to students each summer, and students are chosen by application process by the faculty mentors of each program. The internships are overseen by the SML Director of Programs, and students work directly with faculty mentors and SML scientists to conduct research experiments and projects. Internships may cover a variety of topics (i.e., intertidal ecology; marine mammal behavior; ecological genomics; field ornithology; gull population biology; environmental education; garden horticulture; and, sustainable engineering). Interns (and their projects) are evaluated by the Assistant Director for Appledore Programs who receives a “quick look” report from each that summarizes their research topic, methods, and findings. Interns work with their mentors to submit a full report that is written as a manuscript suitable for submission for peer-reviewed publication.

While both institutions (CU and UNH) have programs of study that consist of planned educational experiences that meet stated objectives and include attention to required prerequisites, required courses, and appropriate progression, specific courses and internship experiences offered at SML contribute to, but do not comprise completely, programs of study at the two institutions. That is, programs at SML are limited to courses, internships, and some outreach experiences for high school students and university/college undergraduates, and these courses contribute to programs of study for students at CU, UNH, or other universities/colleges.

For example, Cornell University offers both a Marine Biology concentration in its Biology program as well as a minor in Marine Biology. Requirement in both the concentration and the minor include courses that are offered at SML (e.g, BIOSM 1610 – Ecology and the Marine Environment; BIOSM 1780 – Evolution and Marine Diversity; BIOSM 3210 – Anatomy and Function of Marine Vertebrates). These, and the other courses offered at SML (considered off-campus programs by CU and UNH) are equivalent to those conducted at the home campus.

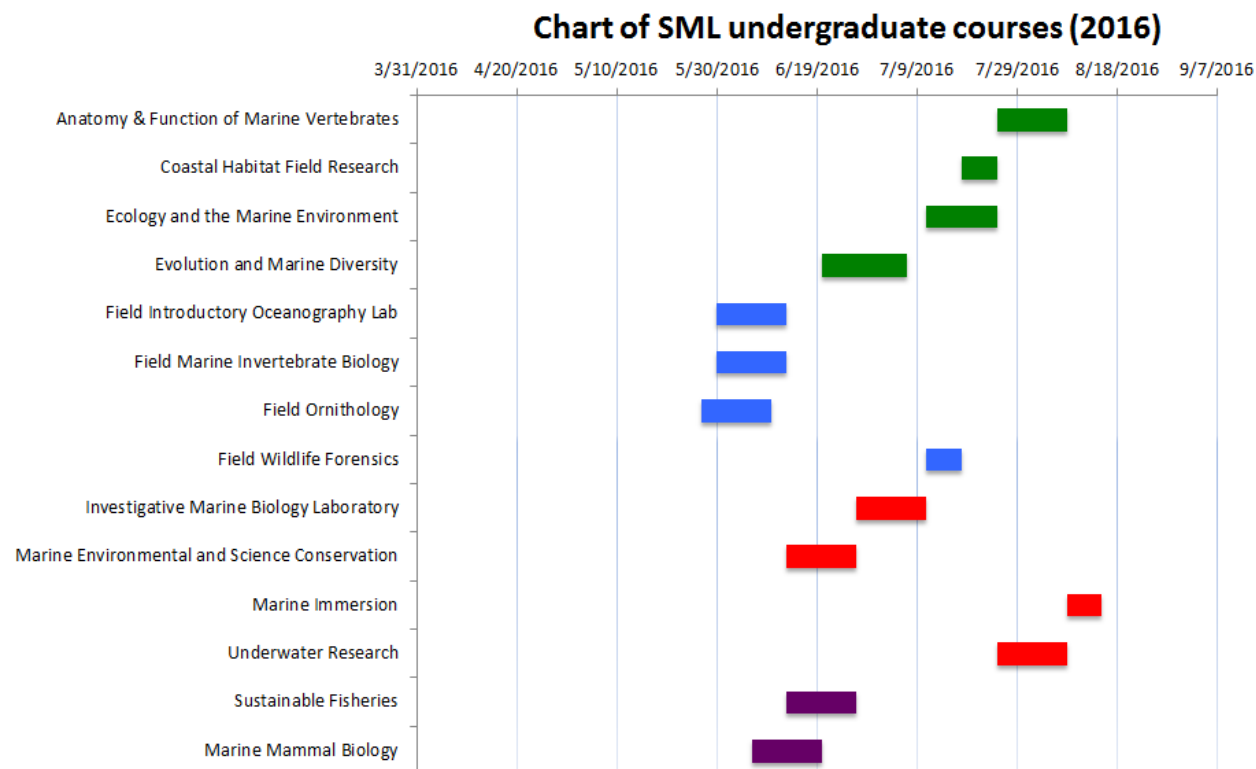


Figure 1. List of the 14 undergraduate courses at SML during spring and summer 2016

The materials and equipment necessary for attainment of the various course objectives are available at SML (see section I for more details). This includes logistical support such as vehicles, vessels and other watercraft, lab/research equipment such as microscopes, video conferencing, housing, power, and other support services. In addition, most courses rely/depend upon using various parts of the 95-acre SML property (academic and other buildings as well as the vast rocky shores and off-shore waters around the island) to enhance student learning.

The standards are met for section E (Academic Programs).

Standard F: Faculty

1. The preponderance of faculty members provide instruction and possess academic, scholarly, and teaching qualifications appropriate to their respective positions and teaching assignments and are distributed in such a way that all Maine students benefit from these qualifications.

2. The institution's system for evaluation of faculty is utilized with the evaluation of all faculty providing instruction at the Maine site.

Committee response: Thirty faculty are listed in Attachment 8 in the joint application (27 with Ph.D.'s; 1 with a D.V.M.; 2 with M.S. degrees). In addition, at least two other faculty, who are not listed in Attachment 8 (Drs. Elizabeth Halliday and Dr. Jessica Bolker), teach courses at SML. Dr. Halliday and two other faculty each offer a course for high school students (see Attachment 4) who receive 1-3 credits from Cornell University when they fulfill all of the course requirements.

During 2016, twenty-nine faculty are teaching a total of 14 undergraduate courses (Attachment 5; five courses are taught by a single faculty, five courses are taught by two faculty, two courses are taught by three faculty, and one course each is taught by four and five faculty members; Fig. 2). Only one faculty member (Dr. Jan Factor) teaches more than one course. Students receive 1.5-4 credits for these 14 courses, and can choose CU or UNH as the institution for which credit is applied/accrued. Credits also may be transferred from CU or UNH to the student's home institution.

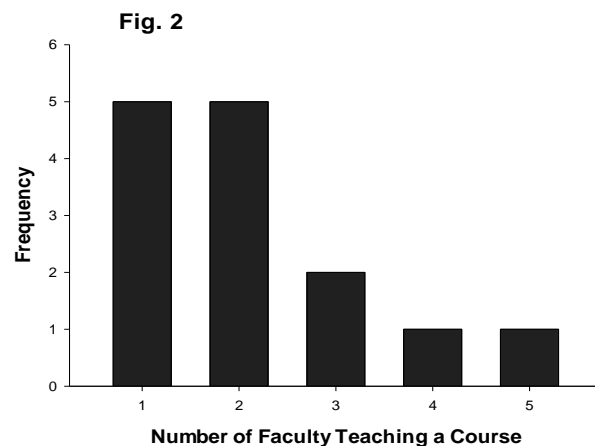


Figure 2. Frequency of number of faculty teaching courses at SML (Summer 2016). (N = 14 courses)

More than 95% of the faculty listed in Attachment 8 provide instruction and possess academic, scholarly, and teaching qualifications appropriate to their respective positions and teaching assignments. Any student from Maine (high school, undergraduate, or other) would benefit from these qualifications.

Faculty are vetted and approved by both SML staff as well as UNH and CU academic departments. Some serve as mentors of two- to ten-week research internships each summer in which students are chosen by an application process that is spearheaded by the faculty mentor of each program.

UNH faculty, CU faculty, and non-UNH or CU faculty review academic programs through the SML Academic Advisory Committee that meets once a year to review the appropriateness of all courses, and to review faculty qualifications. This vetting process for faculty who teach at the SML is the same one used on each of the two campuses. That is, the institution's system for evaluation of faculty is utilized with the evaluation of all faculty providing instruction at the Maine site.

The standards are met for section F (Faculty).

Standard G: Student Services:

1. Students are provided with, and have access to, a system of educational, career and personal advising services.

Committee response: SML provides health, safety, housing, academic support services, informal career planning and special accommodations to all students.

Students with disabilities or who otherwise require special arrangements and accommodation are asked to contact either Cornell University's or UNH's offices for Student Disability Services: for the Cornell Disability Services office (<http://sds.cornell.edu/>); for the UNH Disability Services for Students office (<https://www.unh.edu/disabilityservices>).

Student Disability Services is the designated office at CU that obtains and files disability related documents, certifies eligibility for services, determines reasonable accommodations, and develops plans for the provision of accommodations for students. SDS facilitates services and accommodations so that CU students with disabilities enjoy the same exceptional opportunities as their peers with the greatest degree of independence.

UNH's Disability Services for Students (DSS) office serves a growing number of students with documented disabilities entering higher education. These students come from Continuing Education, Thompson School, Baccalaureate, Masters, and PhD programs.

SML does not offer formal advising services. Due to the 24/7 nature of the program, informal advising is an integral part of the program.

Financial aid is available to all undergraduate students. Both need-based and merit-based scholarships are awarded annual. All recipients must have a minimum of a 3.2 GPA. The minimum scholarship award is \$3,000. Student may also offset the cost of taking a SML course by getting a SML work-study position before or after their course (students cannot work during their course).

The island office and informatory are located on the second floor of the Hamilton House on Appledore Island and is staffed from 8 am to 6 pm. Staff reside on campus and the facilities include residential living quarters (Bartels Hall and Kingsbury), lecture halls and library (Laighton House), laboratory (Palmer-Kinney and Grass), student dormitories, and a student service center (Kiggins Commons).

CU and UNH provide all SML students with and access to financial aid, informal career advising, unique residential short-term living experience on Appledore, and modern facilities.

The standards are met for section G (Student Services).

Standard H: Library and Learning Resources

1. The institution maintains and provides ready access to library and learning resources,

virtual and/or physical, that are adequate and appropriate for student achievement of stated program goals and objectives.

Committee response: SML has a modest computer facility and reference materials located in Loughton Library. Printers are available in this space.

Both universities' libraries are outstanding, and are available to all SML students via their ID#, received upon enrollment.

The CU library holds over 8 million volumes and over a million eBooks and has over 5 million journal article downloads per year and 91% of the current 120,000 current serial titles available online.

The UNH library has approximately 2.7 million print and electronic items and over 104,000 print and electric serial subscriptions.

The standards are met for section H (Library and Learning Resources).

Standard I: Facilities

1. The institution provides and maintains an appropriate learning environment with the necessary supports and technologies sufficient for student achievement of educational objectives. In doing so, industry standards for health, safety, and maintenance are followed.

Committee response: SML provides and maintains an excellent learning environment with the necessary supports and technologies sufficient for student achievement of educational objectives. SML is located on Appledore Island, approximately 6 miles offshore from Kittery, Maine. The SML operates on Appledore Island under terms of a lease with The Star Island Corporation. The 95-acre property is maintained by a fulltime (year-round) staff of 10 people who, among other tasks, maintain and provide support for facilities. During the programming season (May-August), an additional 12 seasonal staff (chefs, research vessel captains, an island coordinator, laboratory coordinator, and island engineers) help fulltime staff support the logistics and of running all programs and facilities.

Students who enroll in courses or are engaged as research interns require housing, as do faculty and staff. SML provides ample housing for all three groups. Three dormitories (I, II, III) provide ten double occupancy rooms. Founder's Hall functions as housing for students, researchers, and faculty, and Bartels Hall serves as the staff residence hall. The SML director, guests, faculty with family, and close-down crews occupy the Kingsbury House (K-House). Dining for all occurs in Kiggins Commons, which also serves as a commons for study, lectures, and evening socializing. Its ground level floor houses a research area for the research interns. Dormitories were constructed in the late 1970's, Bartels Hall, built in 1910, was renovated sometime in the past three decades, Founder's Hall was built in the last century and completely renovated in

1993, and the K-House was completed during the summer of 2001. Kiggins Commons was completed in 1974, and houses the kitchen and dining areas.

Formal lectures on the 95-acre campus occur at Loughton House (two lecture halls are on the 1st floor and a small library and classroom are on the 2nd floor), the Hugh G. Hamilton House (that also provides the Island Office), and in the Palmer-Kinne Laboratory (built in 1975 and this serves as SML's major teaching laboratory, with space for up to 60 students). The lab is equipped with a variety of scientific sampling equipment, and two large sea tables that supply running seawater for housing marine organisms. In addition, the Utility Building, constructed in the early 1970's, houses the Grass Foundation Laboratory that provides space and running fresh and saltwater for faculty and student research as well as the Appledore Island Migration Banding Station. The Utility Building also houses the generator room (three diesel generators), machine workshop, and a reverse osmosis desalination system.

Other buildings include the Radar Tower (stores equipment and supplies; research instruments; two green power grids), Paint Shed (stores paint and other flammable materials such as gasoline), Dive Locker (staging area for SML research divers), Pole Barn (built in 2000, it is used to house all of SML's heavy equipment and vehicle, and serves as a woodworking shop in summer), Water Conservation Building (constructed in 2010 and contains foaming composting toilets), Energy Conservation Building (built in 2013, it houses a large bank of batteries that store energy produced by the solar panels and wind turbine).

Cornell University is responsible for insurance on all physical facilities except the Hamilton House, which is insured through the University of New Hampshire.

SML provides a variety of vessels and small boats for courses, research, and outreach work. The largest vessel (R/V John M. Kingsbury) is 47-feet long with a 16-foot beam that can hold 48 passengers and two crew. SML provides a certified captain and crew for courses and research charters. The vessel houses a 1-ton crane, and A-frame that are used to support a SeaBird CTD, plankton nets, otter trawl, bottom dredge, and a Niskin water sampler. The R/V J.B. Heiser is 35-feet long with a 12-foot beam that can hold 23 passengers and two crew. The vessel has a starboard davit for hauling, and contains plankton nets, Niskin water sampler, and hagfish trap deployment/retrieval gear. The R/V Acipenser is a 1994 Winniehoff boat (27-ft, aluminum hull) with a 120-hp Volvo Penta AD31D diesel engine. The R/V Storm Petrel is a 2006 Parker 2120 Sport Cabin (21-ft, fiberglass hull) with a 150-hp Yamaha outboard. Other boats include a 16-ft Boston Whaler, 16-foot inflatable, and two sailboats – a 16-ft Herreshoff Doughdish, and a 19-ft Cape Dory Typhoon.

Equipment listed in the application that is valued at over \$10,000 (purchase price) included: 1) Nikon E800 Microscope; 2) Olympus Stereozoom Microscope; 3) Skeletal Teaching Specimens; 4) Polar King Walk-in Freezer; and, 5) Video Conferencing Equipment.

SML provides specific health and safety support for students, faculty, and staff. SML staff trains extensively with UNH police, the U.S. Coast Guard, Maine Marine Patrol, and Kittery Police to be prepared for water or island emergencies. SML keeps several safety manuals, including sexual harassment, hazardous waste, and disaster preparedness (these are given in Attachment

10). Diving safety is critically important, and those policies are outlined in the SML Handbook for Diving Safety (see Attachment 11). All SML facilities and operations are overseen by both CU and UNH Health and Human Safety/Risk Management offices. Attachment 10 includes disaster planning for fire, medical, diving, and evacuation. This is well-conceived, and explains thoroughly the equipment available and procedures to be used in case of an emergency. For example, besides smoke detectors, all buildings have a 50-foot, ¾-inch fire hose attached to the outside of the building and a full complement of fire extinguishers to fight fire at that site. The Common's kitchen has an automated CO₂ system to help extinguish fires quickly. All vessels have various types of fire extinguishers, and crew training at a US Coast Guard-approved fire-fighting school is required on a 5-year basis.

The standards are met for section I (Facilities).

Standard J: Financial Resources

The application from an existing degree-granting institution clearly documents that it has the financial resources necessary to support its purposes, implement its Maine program and maintain its continuity for a period of time by providing its most recent audited financial statement, and that evidence exists of long range financial planning and viability.

Committee response: The University of New Hampshire has administrative oversight of SML, which includes monitoring expenditures against the jointly-approved SML budget. Cornell University manages certain financial matters for the benefit of SML (such as endowment performance and payouts and gifts) in compliance with financial reporting obligations.

The application includes an Attachment 13 which gives the annual operating budgets for the years 2008 to 2016.

The strong financial underpinnings of the Shoals Marine Laboratory by the two major universities is beyond question.

The committee finds that the standard is met for Section J.

III. Conclusion and Recommendation:

It is the opinion of the three-member review committee that the Shoals Marine Laboratory is without question a solid program that delivers excellence in undergraduate education and in their high school programs. Maine is lucky to have such a prestigious pair of institutions making such use of one of our thousands of pristine, beautiful islands.

The committee recommends that the Maine Board of Education accept and approve this application.